

## CLAIMS

1. A personal ornament having a white coating layer comprising:

5 a base article of the personal ornament made of a metal, and

a white-colored stainless steel coating layer formed by a dry plating process on at least a part of the surface of the base article.

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2. A personal ornament having a white coating layer comprising:

a base article of the personal ornament made of a nonferrous metal,

15 an underlying plating layer formed on the surface of the base article, and

a white-colored stainless steel coating layer formed by a dry plating process on at least a part of the surface of the underlying plating layer.

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3. The personal ornament having a white coating layer according to claim 1 or 2, wherein a white-colored noble metal coating layer is formed in a thickness ranging from 0.04 to  $0.3\mu\text{m}$  by a dry plating process on the surface of 25 the stainless steel coating layer.

4. The personal ornament having a white coating layer according to claim 1, wherein the base article of the personal ornament is made of tungsten carbide or tantalum carbide.

5. The personal ornament having a white coating layer according to claim 2, wherein the base article of the personal ornament is made of a nonferrous metal selected from the group consisting of copper, copper alloys, aluminum, aluminum alloys, zinc, zinc alloys, magnesium, and magnesium alloys.

6. The personal ornament having a white coating layer according to claim 2, wherein the underlying plating layer has a multilayer structure constituted of at least one plating layer formed by a wet plating process and at least one plating layer formed by a dry plating process.

20 7. The personal ornament having a white coating layer according to claim 2 or 6, wherein the underlying plating layer comprises a coating layer which is formed by a wet plating process and is composed of at least one metal selected from the group consisting of gold, copper, nickel, chromium, tin, palladium, nickel-phosphorus alloys, nickel

alloys excluding nickel-phosphorus alloys, copper-tin-palladium alloys, copper alloys excluding copper-tin-palladium alloys, tin alloys excluding copper-tin-palladium alloys, and palladium alloys excluding copper-tin-palladium alloys.

8. The personal ornament having a white coating layer according to claim 7, wherein the nickel-phosphorus alloy plating layer as the underlying plating layer is a hard coating layer having been treated for age hardening.

9. The personal ornament having a white coating layer according to claim 2 or 6, wherein the underlying plating layer is a coating layer formed by a wet plating process and composed of at least one nickel-free metal selected from the group consisting of gold, copper, chromium, tin, palladium, copper-tin-palladium alloys, copper alloys excluding copper-tin-palladium alloys, tin alloys excluding copper-tin-palladium alloys, and palladium alloys excluding copper-tin-palladium alloys.

10. The personal ornament having a white coating layer according to claim 2 or 6, wherein the underlying plating layer is a coating layer formed by a dry plating process and is composed of titanium carbide, zirconium carbide, or

tantalum carbide.

11. The personal ornament having a white coating layer according to any of claims 2, and 6 to 10, wherein the 5 underlying plating layer has an entire thickness ranging from 0.2 to 30  $\mu$ m.

12. The personal ornament having a white surface coating layer according to any of claims 1 to 3, wherein 10 the white-colored stainless steel coating layer is composed of an austenitic stainless steel having a composition of 0.01-0.12 vol% of carbon, 0.1-1.0 vol% of silicon, 1.0-2.5 vol% of manganese, 8-22 vol% of nickel, and 15-26 vol% of chromium.

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13. The personal ornament having a white coating layer according to any of claims 1 to 3, wherein the white-colored stainless steel coating layer is composed of a nickel-free ferritic stainless steel having a composition 20 of 0.01-0.12 vol% of carbon, 0.1 -1.0 vol% of silicon, 1.0-2.5 vol% of manganese, 14-20 vol% of chromium, and 0.4-2.5 vol% of molybdenum.

14. The personal ornament having a white coating layer 25 according to any of claims 1 to 3, and 12 and 13, wherein

the white-colored stainless steel coating layer is formed by a dry plating process selected from a sputtering method, an arc evaporation method, or an ion-plating method.

5 15. The personal ornament having a white coating layer according to any of claims 1 to 14, wherein the stainless steel coating layer has a thickness ranging from 0.1 to 2.0  $\mu$ m.

10 16. The personal ornament having a white coating layer according to any of claims 1 to 15, wherein, on the surface of the base article or of the underlying plating layer, at least one plating layer different in color tone from the white-colored stainless steel coating layer is 15 formed by a dry plating process in addition to the stainless steel coating layer formed by a dry plating process.

17. The personal ornament having a white coating layer 20 according to claim 16, wherein the plating layer different from the stainless steel coating layer is at least one coating layer composed of gold, gold alloys, titanium nitride, and zirconium nitride.

25 18. The personal ornament having a white coating layer

according to claim 3, wherein the white-colored noble metal coating layer is a coating layer formed by a dry plating process and composed of a noble metal selected from the group consisting of palladium, platinum, rhodium, 5 gold alloys, silver, and silver alloys.

19. A process for producing a personal ornament having a white coating layer comprising the steps of:

10 forming a base article of the personal ornament by machining a metal;

washing and degreasing the surface of the base article;

15 setting the base article in a dry plating apparatus selected from sputtering systems, arc evaporation systems, and ion-plating systems, and cleaning the base article by bombard cleaning in an argon gas atmosphere; and

20 forming a white-colored stainless steel coating layer by a dry plating process on the surface of the base article.

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20. A process for producing a personal ornament having a white coating layer comprising the steps of:

25 forming a base article of the personal ornament from a nonferrous metal by machining;

washing and degreasing the surface of the base

article;

forming on the surface of the base article an underlying plating layer by a wet plating process or a dry plating process;

5 setting the base article having the underlying plating layer in a dry plating apparatus selected from sputtering systems, arc evaporation systems, and ion-plating systems, and cleaning the surface of the underlying plating layer by bombard cleaning in an argon 10 gas atmosphere; and

forming a white-colored stainless steel coating layer by a dry plating process on the surface of the underlying plating layer.

15 21. The process for producing a personal ornament having a white coating layer according to claim 19 or 20, which further comprises, after the formation of the white-colored stainless steel coating layer, the step of forming a white-colored noble metal coating layer in a thickness 20 ranging from  $0.04$  to  $0.3\mu\text{m}$  by a dry plating process on the surface of the stainless steel coating layer.

22. The process for producing a personal ornament having a white coating layer according to claim 19,

25 wherein the metal employed for forming the base article of

the personal ornament is tungsten carbide or tantalum carbide.

23. The process for producing a personal ornament

5 having a white coating layer according to claim 20,

wherein the nonferrous metal employed for forming the base

article of the personal ornament is at least one

nonferrous metal selected from the group consisting of

copper, copper alloys, aluminum, aluminum alloys, zinc,

10 zinc alloys, magnesium and magnesium alloys.

24. The process for producing a personal ornament

having a white coating layer according to claim 20,

wherein the underlying plating layer has a multilayer

15 structure constituted of at least one plating layer formed

by a wet plating process on the surface of the base

article and at least one different plating layer formed

thereon by a dry plating process.

20 25. The process for producing a personal ornament

having a white coating layer according to claim 20 or 24,

wherein the underlying plating layer is formed by a wet

plating process from at least one metal selected from the

group consisting of gold, copper, nickel, chromium, tin,

25 palladium, nickel-phosphorus alloys, nickel alloys

excluding nickel-phosphorus alloys, copper-tin-palladium alloys, copper alloys excluding copper-tin-palladium alloys, tin alloys excluding copper-tin-palladium alloys, and palladium alloys excluding copper-tin-palladium alloys.

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26. The process for producing a personal ornament having a white coating layer according to claim 25, wherein the nickel-phosphorus alloy plating layer as the underlying plating layer is treated for age hardening at 10 200 to 450°C for 20 to 60 minutes to harden the nickel-phosphorus alloy plating layer.

27. The process for producing a personal ornament having a white coating layer according to claim 20 or 24, 15 wherein the underlying plating layer is formed by a wet plating process from at least one nickel-free metal selected from the group consisting of gold, copper, chromium, tin, palladium, copper-tin-palladium alloys, copper alloys excluding copper-tin-palladium alloys, tin 20 alloys excluding copper-tin-palladium alloys, and palladium alloys excluding copper-tin-palladium alloys.

28. The process for producing a personal ornament having a white coating layer according to claim 20 or 24, 25 wherein the underlying plating layer is formed from

titanium carbide, zirconium carbide or tantalum carbide by a dry plating process.

29. The process for producing a personal ornament

5 having a white coating layer according to any of claims 20, and 24 to 28, wherein the underlying plating layer has an entire thickness of ranging from 0.2 to 30  $\mu\text{m}$ .

30. The process for producing a personal ornament

10 having a white coating layer according to any of claims 19 to 21, wherein the white-colored stainless steel coating layer is composed of an austenitic stainless steel having a composition of 0.01-0.12 vol% of carbon, 0.1-1.0 vol% of silicon, 1.0-2.5 vol% of manganese, 8-22 vol% of nickel 15 and 15-26 vol% of chromium; and is formed by a sputtering method, an arc evaporation method or an ion plating method

31. The process for producing a personal ornament

20 having a white coating layer according to any of claims 19 to 21, wherein the white-colored stainless steel coating layer is composed of a nickel-free ferritic stainless steel having a composition of 0.01-0.12 vol% of carbon, 0.1 -1.0 vol% of silicon, 1.0-2.5 vol% of manganese, 14-20 25 vol% of chromium, and 0.4-2.5 vol% of molybdenum; and is

1000 900 800 700 600 500 400 300 200 100

formed by a sputtering method, an arc evaporation method, or an ion plating method.

32. The process for producing a personal ornament

5 having a white coating layer according to any of claims 19, 20, and 22 to 31, which further comprises,

after the steps of forming a white-colored stainless steel coating layer on the surface of the ornament base article or of the underlying coating layer,

10 at least once the steps of:

masking a part of the stainless steel coating layer, forming a plating layer different in color tone from the stainless steel coating layer on the surface of the stainless steel coating layer and the surface of the

15 mask by a dry plating process, and

removing the mask and the coating layer on the mask, to thereby provide an outermost plating layer having a white-colored stainless steel coating layer

portion and at least one plating layer portion different

20 in color tone from the stainless steel coating layer.

33. The process for producing a personal ornament

having a white coating layer according to claim 32,

wherein the plating layer different in color tone from the

25 stainless steel coating layer is at least one coating

layer formed from a metal selected from the group consisting of gold, gold alloys, titanium nitride, hafnium nitride and zirconium nitride by a dry plating process selected from sputtering methods, arc evaporation methods, 5 and ion plating methods.

34. The process for producing a personal ornament having a white coating layer according to claim 21, wherein the white-colored noble metal coating layer is a 10 coating layer formed by a dry plating process from a noble metal selected from the group consisting of palladium, platinum, rhodium, gold alloys, silver and silver alloys.